


CLAIMS

1 5w 1. A method for manufacturing a wafer-interposer assembly comprising the steps of:
2 BT
3 providing a semiconductor wafer including one or more semiconductor die, each
4 semiconductor die having one or more first electrical contact pads;
5 providing an interposer having one or more communication interfaces and a second
6 electrical contact pad corresponding to each of the one or more first electrical contact pads
7 on each semiconductor die of the semiconductor wafer, and at least one of the second
8 electrical contact pads electrically connected to the one or more communication interfaces;
9 and
10 forming the wafer-interposer assembly by connecting each first electrical contact pad
11 of the semiconductor wafer to the corresponding second electrical contact pad of the
interposer with a conductive attachment element.

1 2. The method as recited in claim 1, further comprising the steps of:
2 attaching the wafer-interposer assembly to a testing apparatus; and
3 testing the semiconductor die.


1 3. The method as recited in claim 3, further comprising the step of singulating the
2 wafer-interposer assembly into one or more chip assemblies.

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1 The method as recited in claim 1 wherein the step of testing the semiconductor die
2 further comprises testing the semiconductor die in sequence.

1  The method as recited in claim 1 wherein the step of testing the semiconductor die
2 further comprises testing the semiconductor die simultaneously.

1 7. The method as recited in claim 1 wherein the step of testing the semiconductor chips
2 further comprises using a multiplexer.

1 ~~8.~~ The method as recited in claim 1 further comprising the step of grading each of the
2 semiconductor die during testing and sorting the semiconductor chips based upon
3 performance level.

1  The method as recited in claim 1 further comprising the step of grading each of the
2 semiconductor die during testing and sorting the semiconductor die into conforming and non-
3 conforming groups.

1 ~~10.~~⁹ The method as recited in claim 1 wherein the one or more communication interfaces
2 comprises one or more integral edge connectors with pins and/or sockets.

1 ~~11.~~¹⁰ The method as recited in claim 1 wherein the one or more communication interfaces
2 comprises one or more integral bayonet connectors with pins and/or sockets.

1 ~~12.~~¹¹ The method as recited in claim 1 wherein the one or more communication interfaces
2 comprises one or more connectors added to the wafer-interposer assembly.

1 ~~13.~~¹² The method as recited in claim 1 wherein the one or more communication interfaces
2 comprises one or more soldered connections.

1 ~~14.~~¹³ The method as recited in claim 1 wherein the one or more communication interfaces
2 comprises one or more ribbon connectors.

1 ~~15.~~¹⁴ The method as recited in claim 1 wherein the one or more communication interfaces
2 comprises one or more RF connectors.

1 ~~16.~~¹⁵ The method as recited in claim 1 wherein the one or more communication interfaces
2 comprises one or more optical or infrared connectors.

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1 19. A wafer-interposer assembly comprising:
2 a semiconductor wafer including one or more semiconductor die, each semiconductor
3 die having one or more first electrical contact pads; and
4 an interposer connected to the semiconductor wafer, the interposer having one or
5 more communication interfaces and a second electrical contact pad corresponding to each
6 of the one or more first electrical contact pads on each semiconductor die of the
7 semiconductor wafer, at least one of the second electrical contact pads electrically connected
8 to the one or more communication interfaces, and each first electrical contact pad of the
9 semiconductor wafer connected to the corresponding second electrical contact pad of the
10 interposer with a conductive attachment element.

1 20. The wafer-interposer assembly as recited in claim 19 wherein the one or more
2 communication interfaces comprises one or more integral edge connectors with pins and/or
3 sockets.

1 21. The wafer-interposer assembly as recited in claim 19 wherein the one or more
2 communication interfaces comprises one or more integral bayonet connectors with pins
3 and/or sockets.

1 22. The wafer-interposer assembly as recited in claim 19 wherein the one or more
2 communication interfaces comprises one or more connectors added to the wafer-interposer
3 assembly.

1 23. The wafer-interposer assembly as recited in claim 19 wherein the one or more
2 communication interfaces comprises one or more soldered connections.

1 24. The wafer-interposer assembly as recited in claim 19 wherein the one or more
2 communication interfaces comprises one or more ribbon connectors.

1 25. The wafer-interposer assembly as recited in claim 19 wherein the one or more
2 communication interfaces comprises one or more RF connectors.

1 26. The wafer-interposer assembly as recited in claim 19 wherein the one or more
2 communication interfaces comprises one or more optical or infrared connectors.

1 27. The wafer-interposer assembly as recited in claim 19 wherein the one or more
2 communication interfaces comprises one or more transmit/receive antennas.

1 28. The wafer-interposer assembly as recited in claim 19 wherein the one or more
2 communication interfaces comprises one or more clamps or quick release devices.

- 1 29. An interposer comprising:
2 a multi-layer sheet having a first surface and a second surface;
3 a first pattern of electrical contact pads disposed on the first surface and
4 corresponding to a second pattern of electrical contact pads disposed on a surface of a
5 semiconductor wafer;
6 one or more communication interfaces attached to the multi-layer sheet; and
7 a set of conductors each of which connect at least one electrical contact pad disposed
8 on the first surface to the one more communication interfaces.
- 1 30. The interposer as recited in claim 29 further comprising a third pattern of electrical
2 contact pads disposed on the second surface of the multi-layer sheet and connected to one
3 or more of the electrical contact pads disposed on the first surface via one or more
4 conductors.
- 1 31. The interposer as recited in claim 29 further comprising a multiplexer between the
2 electrical contact pads disposed on the first surface and the one or more communication
3 interfaces.
- 1 32. The interposer as recited in claim 29 wherein the second pattern of electrical contact
2 pads conforms to an industry-standard layout.

1 33. The interposer as recited in claim 29 further comprising an array of conductive
2 attachment elements disposed on the first pattern of electrical contact pads.

1 34. The interposer as recited in claim 29 further comprising an array of conductive
2 attachment elements disposed on the second pattern of electrical contact pads.

1 35. The interposer as recited in claim 29 wherein the one or more communication
2 interfaces comprises one or more integral edge connectors with pins and/or sockets.

1 36. The interposer as recited in claim 29 wherein the one or more communication
2 interfaces comprises one or more integral bayonet connectors with pins and/or sockets.

1 37. The interposer as recited in claim 29 wherein the one or more communication
2 interfaces comprises one or more connectors added to the wafer-interposer assembly.

1 38. The interposer as recited in claim 29 wherein the one or more communication
2 interfaces comprises one or more soldered connections.

1 39. The interposer as recited in claim 29 wherein the one or more communication
2 interfaces comprises one or more ribbon connectors.

1 40. The interposer as recited in claim 29 wherein the one or more communication
2 interfaces comprises one or more RF connectors.

1 41. The interposer as recited in claim 29 wherein the one or more communication
2 interfaces comprises one or more optical or infrared connectors.

1 42. The interposer as recited in claim 29 wherein the one or more communication
2 interfaces comprises one or more transmit/receive antennas.

1 43. The interposer as recited in claim 29 wherein the one or more communication
2 interfaces comprises one or more clamps or quick release devices.